

OUTLINE REPORT
of
The Symposium
on
Development of Wind Power Generation
at Port and Coastal Areas

JULY 2005

Coastal Development Institute of Technology

DATE and PLACE

July 19, 2005 at PACIFICO YOKOHAMA

SPONSORSHIP

Study Group on Development of Wind Power Generation at Port and Coastal (DWPGPC)
Coastal Development Institute of Technology

SUPPORT

Ports and Harbours Bureau, Ministry of Land, Infrastructure and Transport (MLIT)/
Agency for Natural Resources and Energy (ANRE), Ministry of Economy, Trade and
Industry (METI)/ City of Yokohama / The New Energy and Industrial Technology
Development Organization (NEDO) / New Energy Foundation (NEF) / Japanese Wind Power
Association / Japan Wind Energy Association / National Conference of Cities, Towns and
Villages on Promotion of Wind Power Generation

OBJECTIVES

The symposium was planned for promoting development of wind power generation at port and coastal areas in response to the needs for preventing global warming. The symposium consists of;

1. Introduction of present state and future trends of wind power generation as renewable energy at port areas and coastal areas in Japan and overseas
2. Report on the achievement of the joint research on development of wind power generation at port and coastal areas by Study Group composed of the Coastal Development Institute of Technology and forty-two private companies
3. Exchange of opinions regarding the necessity, attractiveness and challenging subjects on development of wind power generation at port and coastal areas

PROGRAM

Opening Address	Susumu Murata President, Coastal Development Institute of Technology
Guest Speech	Narikuni Nakao Deputy Director General for Engineering Affairs, Ports and Harbours Bureau, MLIT Yumiko Araki (by message) Director, New and Renewable Energy Division, ANRE, MEIT Tadashi Nakane Director General, Port and Harbour Bureau, City of Yokohama
Keynote Speech 1	Prof. Izumi Ushiyama Director of Collaborative Research Center, Ashikaga Institute of Technology
Keynote Speech 2	Dr. Preben Maegaard Founding President, The World Wind Energy Association
Report on Activities of Study Group	Study Group on DWPGPC
Panel Discussion	
Coordinator	Prof. Izumi Ushiyama
Panelist	Dr. Preben. Maegaard, Mr. Ken Watanabe, Mr. Shigeo. Douhata, Mr. Michio Tanahashi, Mr. Hiroyuki Geshi
Closing Address	Tatsuyuki Shishido Senior Executive Managing Director, Coastal Development Institute of Technology

KEYNOTE SPEECH 1

Present State and Future Prospects on Wind Power Generation in Japan

Prof. Izumi Ushiyama

Director of Collaborative Research Center, Ashikaga Institute of Technology

(The following was summarized by the secretariat)



Wind power generation in Japan began as a national project in the beginning of 1980s. Its present state is about five years behind in Europe but the trends of introducing wind power generation shows a rapid increasing learning curve that is unprecedented case in the world. But the wind power generation in Japan has not yet established as a self-sustaining industry at present and counts on national government support measures.

In order to expand wind power generations in Japan, it is necessary for industrial, administrative and academic sectors to challenge technological subjects, establish necessary policies and schemes and make efforts of private companies cooperatively. In addition, a system suited to the characteristics of Japan must be developed.

Offshore wind power generations in Japan should be introduced at port and coastal areas at the first stage, and developed far offshore at next stage. Then, the cooperative deal by the ministries concerned is important.

KEYNOTE SPEECH 2

Application Examples and Future Trends of Wind Power Generation in Europe

Dr. Preben Maegaard

Founding President, The World Wind Energy Association

(The following was summarized by the secretariat)



The potential of renewable energy in the world amounts to fifty times of quantity of consumption, and the challenge is to find a way to have it widely used.

Wind power, particularly offshore wind power generation has achieved steady progress and present challenge is efficient supply with adequate positioning in the midst of present trends and the complexity surrounding energy.

Ensuring grid integration, requiring the sale of the power and ensuring fair pricing are conditions for the success of wind power generation. And the key is discovering how to promote policies in each country according to technological capabilities on the wind power generation.

As the windmills are enlarged, wind power generation related technologies are advancing centered on aerodynamics, mechanical engineering, and electrical and electronic control

etc. Efforts are also being made to deal with environmental challenges on noise, bird strike and impact on fisheries etc.

Location of windmills in coastal areas has a history of almost twenty years. In the future, it will probably be necessary to construct windmills offshore in deep waters such as the ocean surrounding Japan.

Offshore wind power generation plants as part of the ocean scenery integrating wind, waves, fisheries, and scenic elements will be the theme of future research and development as well as a major engineering challenge.

REPORT on ACTIVITIES of STUDY GROUP

Study Group on Development of Wind Power Generation at Port and Coastal Areas

Outline of Activities

Eiji Naruse : Coastal Development Institute of Technology

The Coastal Development Institute of Technology and forty-two private companies conducted joint research for 2 years in 2003 and in 2004. The joint study was carried out under Study Group on Development of Wind Power Generation at Port and Coastal Areas composed of the above organizations. 13 academics as special members, 2 concerned organizations as advisory members and the MLIT and 33 local governments etc. as observers were invited to the Study Group and participated in the discussion.

As sub study groups, WG on Planning, WG on Environmental Assessment, WG on Load, WG on Structure, WG on Construction Work were organized to deal with each technological challenge. Each working group has held meetings and the given subjects were examined among the members.

The report has been prepared through discussions from a variety of perspectives on the results of examination in each WG at Study Group meetings.

Working Group on Planning

Takashi Mochizuki : Nippon Steel Corporation:

project scheme, location, state of the wind, legal system, grid integration, types and scale of equipments, project feasibility etc.

Working Group on Environmental Assessment

Koji Sumita : DAIOH CONSTRUCTION CO.,LTD .

noise, radio wave interference, impact on scenery, birds and aquatic life, interaction between humans and nature etc.

Working Group on Load

Shigeo Yokoyama : NEWJEC Inc.

observation of wind velocity and direction, load, supporting structures, foundation design methods etc.

Working Group on Structure

Motohisa Hara : PENTA-OCEAN CONSTRUCTION CO., Ltd.

applicability of foundation structures, design procedures of foundation structure, fisheries harmonization measures etc.

Working Group on Construction Work

Takashi Hara : TETRA Co.,Ltd. :

characteristics of construction work, undersea cables, construction management, maintenance etc.

PANEL DISCUSSION

Attractiveness of Wind Power Generation at Port Areas and Coastal Areas

(The following was summarized by the secretariat)

Coordinator Prof. Izumi Ushiyama

Panelist Dr. Preben. Maegaard

Mr. Ken Watanabe

Director on Preventing global warming, Environment Planning Bureau, City of Yokohama

Mr. Shigeo Douhata

Director, Industrial Promotion Division, Setana Town

Mr. Michio Tanahashi

Director, Development Division, Ports and Harbours Bureau, MLIT

Mr. Hiroyuki Geshi

Director, Office of Yokohama Technology and Investigation on ports and harbours and airports, Kanto Region Development Bureau, MLIT



Dr. Preben Maegaard



We are now in a period of transition from fossil fuels to renewable energies. A process of smooth transition is a major challenge facing the present generation. Efforts by various sectors concerned are now being made to deal with challenging institution and technology related problems.

The key to the creation of new energy is guidance and the implementation of policies related not only to the environment but also to economic aspects by the national government.

Progress in environmental technology has been achieved through the past construction of windmills. It should be stressed that it will be important to decrease investment risk by, for example, government guarantee of prices. Participation by citizens is also important, so it is vital to convince them that windmills will be part of the scenery at the same time as it is a new source of energy.

Mr. K. Watanabe



The City of Yokohama plans to construct a large windmill in the Port of Yokohama to overcome global scale environmental problems by promoting new energy. Its location is selected at a noticeable place in the Port of Yokohama, where it will stand as a symbol of global warming prevention measures.

And in order to conduct citizen participation type wind power generation, the city has issued regional bonds and requested that citizens participate in the project. The private sectors are expected to use clean energy from the windmill as environmentally friendly corporations.

Mr. S. Douhata



A seacoast urban improvement plan of Setana Town was prepared in 1985 through Marine Town Project Study, but under the impacts of a slowdown of the Japanese economy, the plan was revised and a new project was proposed: offshore wind power generation project and deep sea water project.

Initially fishery related persons objected to offshore wind power generation, but the project was integrated to harmonize with fisheries by the use of its foundation as an abalone and scallops nursery and as a kelp bed. Two windmills at sea area behind a breakwater are in operation. Other six windmill of 2MW at coastal areas will be in operation in this December.

Considering the case of Setana Town, it is vital that the price be guaranteed in order for wind power generation to progress.

Mr. M. Tanahashi



Wind power generation capacity in Japan has been rising rapidly and the location of wind power generation plants at coastal areas is counted on to make a good contribution to its growth.

Japan is dependent on overseas sources for much of its energy, and new energy such as by wind power generation will play an important role in ensuring its supply of energy. Related problems include project feasibility and maintenance costs that must be studied in response to progress in the implementation of projects in the future.

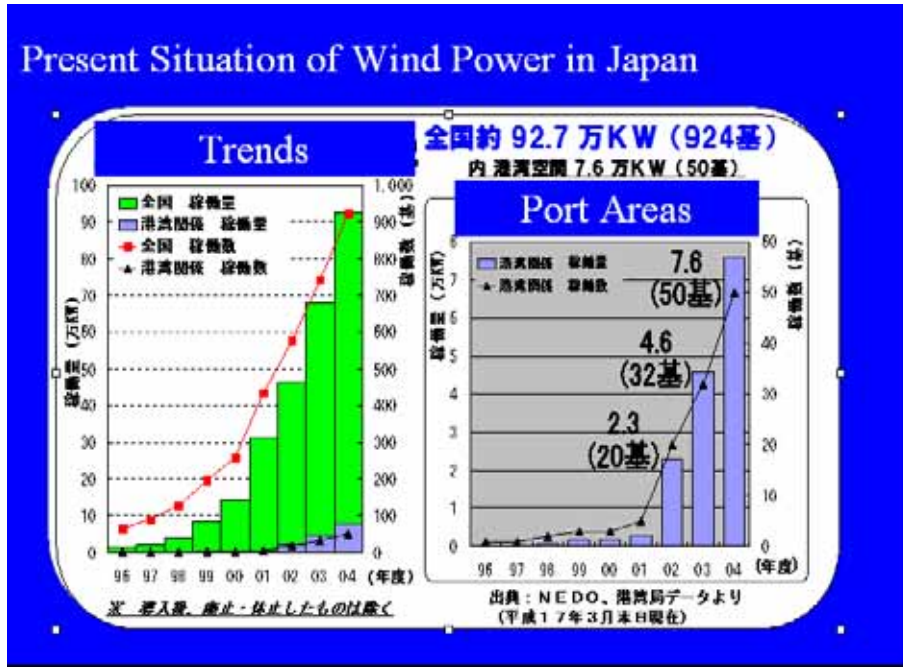
Mr. H. Geshi



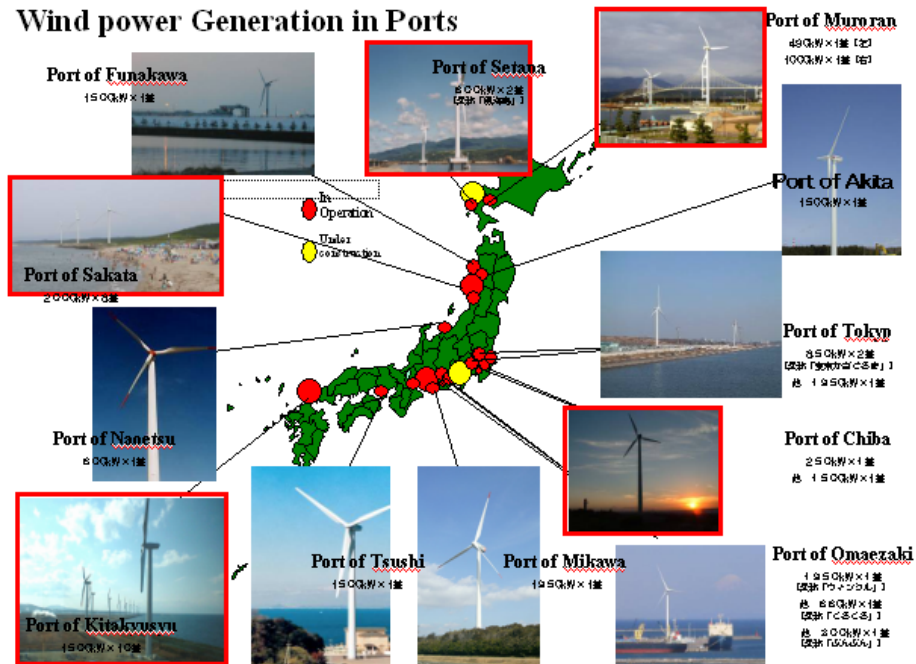
The office conducts investigation on environment and planned that the power supplied from renewable energy source were used in such investigation.

A small windmill with 1360w was installed experimentally at the office site. It rotates well and calmly even in small velocities of wind. The generated power is used as energy for aeration in aquatic lives experimental tank.

Reference



Wind power Generation in Ports



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